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Data management in Oceanography at SOCIB

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SOCIB, the Balearic Islands Coastal Ocean Observing and Forecasting System (<http://www.socib.es>), is a Marine Research Infrastructure, a multiplatform distributed and integrated system, a facility of facilities that extends from the nearshore to the open sea and provides free, open and quality control data. SOCIB is a facility of facilities and has three major infrastructure components: (1) a distributed multiplatform observing system, (2) a numerical forecasting system, and (3) a data management and visualization system. We present the spatial data infrastructure and applications developed at SOCIB.

One of the major goals of the SOCIB Data Centre is to provide users with a system to locate and download the data of interest (near real-time and delayed mode) and to visualize and manage the information. Following SOCIB principles, data need to be (1) discoverable and accessible, (2) freely available, and (3) interoperable and standardized. In consequence, SOCIB Data Centre Facility is implementing a general data management system to guarantee international standards, quality assurance and interoperability. The combination of different sources and types of information requires appropriate methods to ingest, catalogue, display, and distribute this information.

SOCIB Data Centre is responsible for directing the different stages of data management, ranging from data acquisition to its distribution and visualization through web applications. The system implemented relies on open source solutions. In other words, the data life cycle relies in the following stages:

- Acquisition: The data managed by SOCIB mostly come from its own observation platforms, numerical models or information generated from the activities in the SIAS Division.
- Processing: Applications developed at SOCIB to deal with all collected platform data performing data calibration, derivation, quality control and standardization.
- Archival: Storage in netCDF and spatial databases.
- Distribution: Data web services using Thredds, Geoserver and RESTful own services.
- Catalogue: Metadata is provided through the ncISO plugin in Thredds and Geonetwork.
- Visualization: web and mobile applications to present SOCIB data to different user profiles.

SOCIB data services and applications have been developed to provide response to science and society needs (eg. European initiatives such as Emodnet or Copernicus), by targeting different user profiles (eg. researchers, technicians, policy and decision makers, educators, students, and society in general). For example, SOCIB has developed applications to: 1) allow researchers and technicians to access oceanographic information; 2) provide decision support for oil spills response; 3) disseminate information about the coastal state for tourists and recreational users; 4) present coastal research in educational programs; and 5) offer easy and fast access to marine information through mobile devices.

In conclusion, the organizational and conceptual structure of SOCIB's Data Centre and the components developed provide an example of marine information systems within the framework of new ocean observatories and/or marine research infrastructures.